

In the claims:

Please amend the claims as follows:

Claims 1-26 (Canceled)

27. (Currently Amended) A method of producing a protein in a subject *in vivo* comprising introducing into the subject an ~~The method of claim 26, wherein said cell is an~~ intermediate lobe pituitary cell that has been genetically engineered to express and the protein is ~~one which is not normally expressed therein.~~

28. (Currently Amended) The method of claim 27, wherein said intermediate lobe pituitary cells ~~includes~~ cell comprises a nucleic acid sequence which encodes a ~~the protein, the~~ nucleic acid sequence being not normally expressed by an intermediate lobe pituitary cell operatively linked to a heterologous control region ~~which controls expression of the nucleic acid in the intermediate lobe pituitary cell.~~

29. (Original) The method of claim 28, wherein said protein is insulin.

30. (Currently Amended) The method of claim 27, wherein said intermediate lobe pituitary cell is an autologous cell, ~~an allogenic cell, or a xenogenic cell.~~

31. (Currently Amended) The method of claim 28, wherein said subject is a human and the intermediate lobe pituitary cell is an autologous cell, ~~an allogenic cell or a xenogenic cell.~~

Claims 32-38 (Withdrawn)

Claims 39-59 (Canceled)

60. (New) The method of claim 27, wherein said intermediate lobe pituitary cell is an allogenic cell.

61. (New) The method of claim 27, wherein said intermediate lobe pituitary cell is a xenogenic cell.

62. (New) The method of claim 31, wherein said intermediate lobe pituitary cell is an allogenic cell.

63. (New) The method of claim 31, wherein said intermediate lobe pituitary cell is a xenogenic cell.

64. (New) The method of claim 29, wherein said cell further comprises one or more nucleotide sequence encoding a protein that controls expression of insulin in a glucose stimulated manner.

65. (New) The method of claim 64, wherein said protein that controls expression of insulin in a glucose stimulated manner is a glucokinase.

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66. (New) The method of claim 65, wherein said glucokinase is the β -cell isoform of glucokinase.

66. (New) The method of claim 64, wherein said protein that controls expression of insulin in a glucose stimulated manner is a glucose transporter.

67. (New) The method of claim 66, wherein said glucose transporter is GLUT-2.

68. (New) The method of claim 64, wherein said protein that controls expression of insulin in a glucose stimulated manner is an ion channel that mediates glucose-stimulated insulin release.

69. (New) The method of claim 68, wherein said ion channel that mediates glucose-stimulated insulin release is a K⁺/ATP ion channel.

70. (New) The method of claim 64, wherein said protein that controls expression of insulin in a glucose stimulated manner is glucagon-like peptide-1 (GLP-1).

71. (New) The method of claim 64, further comprising evaluating the subject for a parameter relating to glucose metabolism or insulin secretion.

72. (New) The method of claim 71, wherein said parameter is selected from the group consisting of: the amount, distribution or structure of intracellular or extracellular insulin; glucose phosphorylating activity; glucose utilization; glucose uptake; and insulin secretion.

73. (New) The method of claim 28, wherein said control region is a pro-
opiomelanocortin (POMC) promoter.

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74. (New) The method of claim 29, wherein said control region is a POMC promoter.

75. (New) The method of claim 28, wherein said protein is growth hormone.

76. (New) The method of claim 28, wherein said protein is a hematopoietic hormone or growth factor.

77. (New) The method of claim 28, wherein said protein is a cytokine or lymphokine.

78. (New) The method of claim 27, wherein said intermediate lobe pituitary cell is a fetal or post natal cell.

79. (New) The method of claim 27, wherein said subject is a human.

80. (New) The method of claim 27, wherein said cell is a cultured cell.

81. (New) The method of claim 80, wherein said cultured cell is a cultured human cell.

82. (New) The method of claim 27, wherein said cell is from a non-human transgenic animal.

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cont* 83. (New) The method of claim 27, wherein said protein is not expressed in the intermediate lobe pituitary cell in nature.

84. (New) The method of claim 28, wherein said protein is not expressed in the intermediate lobe pituitary cell in nature.

85. (New) The method of claim 27, further comprising the step of administering an immunosuppressant to the subject.
